

request the Council to take such steps as may appear desirable to ascertain the wishes of the Society as a whole in regard to this question.

We understand that there is now an appreciable and increasing number of women of University training engaged in advanced teaching, and in original investigation in chemistry, who desire admission to the privileges of the Fellowship, and as the Chemical Society was founded for the advancement of Science, it seems to us neither just nor expedient that a body of highly qualified workers should be excluded solely by reason of sex.

From the following table, compiled from the Society's journal of the past 35 years, it will be seen that the number of Papers contributed either alone, or jointly, by women is increasing rapidly :—

		No. of papers published in			
		Proceedings		Transactions	
1873-82	...	2	...	2	...
1883-92	...	7	...	7	...
1893-02	...	45	...	33	...
1903-07	...	66	...	61	...

We may further point out that not only have women contributed original memoirs to these publications, but they have rendered valuable service to the Society as abstractors and in the compilation of the Indexes.

As is well known, the Chemical Societies of Berlin and America, the Society of Chemical Industry and the Faraday Society, admit women on the same terms as men, and our Society has found a place for Madame Curie among the Honorary and Foreign Members: we consider, therefore, that the restriction should be removed under which the Chemical Society denies to women chemists the advantages extended to them by the sister Societies at home and abroad.

We are, Gentlemen,

Your obedient Servants.

Here follow the names of the 312 Fellows (including 10 Past Presidents, 12 Vice-Presidents and 29 Members of Council, past and present), among whom are 33 Fellows of the Royal Society and the Professors of Chemistry or Heads of Chemical Departments of nearly all the most important Universities and Colleges in the country.

NOTES.

IN connection with the celebration of the tercentenary of the birth of Evangelista Torricelli, an exhibition will be held at Faenza from August 15 to October 15. Included in the programme, and associated with an international section for physical apparatus, in celebration of Torricelli, a prize of 2000 lire is offered for an instrument in connection with meteorology or physics of the earth. The instrument must be exhibited, and show real novelty, either in its principle or in its application of a principle already known. For further particulars application should be made to Dr. W. N. Shaw, F.R.S., Meteorological Office, 63 Victoria Street, London, S.W.

FROM July 1 the morning hour of observation in the British Isles for the Daily Weather Report of the Meteorological Office has been changed from 8 a.m. to 7 a.m., and that of the midday observation from 2 p.m. to 1 p.m. At only two of the twenty-nine stations have the earlier observations been found impracticable. Simultaneously, arrangements have been made for the transmission of the telegraphic reports from all the stations, except one, at which the early observations are made, and for attendance at the office in Victoria Street at the same hour to receive the messages. It is anticipated that the revised arrangements, by which the observations in this country become synchronous with those of France, Belgium, Holland, Germany, Denmark, Iceland, Norway, and Sweden will lead, when fairly established, to a considerable acceleration of the morning reports.

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BRILLIANT sky-glows were observed in many different parts of the United Kingdom on the night of June 30 and on several succeeding nights, the phenomenon being apparently at its maximum intensity on the night of July 1. The whole of the northern part of the sky, from the horizon to an altitude of about 45°, and extending to the west, was suffused with a reddish hue, the colour varying from a pink to an Indian red, whilst to the eastward of north the colouring was distinctly a pale green. No flickering or scintillation was observed on the reddened sky, nor was there any tendency to the formation of the streamers or luminous arch characteristic of auroræ. Cirro-stratus clouds near the horizon were tinged with the same colour as the surrounding sky. A special feature in connection with the phenomenon was the prolongation of twilight, extending almost to the following daybreak, and from the experience cited by many observers in various parts of Great Britain the light at midnight was sufficient to allow of fairly small print being read without any aid from artificial light. These nocturnal glows were preceded by a drought extending in London, as well as in several other parts of England, to about sixteen days, and it was followed by severe thunderstorms on the night of July 3 and on the succeeding day. The fine weather in many parts of the country has, however, remained unbroken, so that no relation between the display and disturbed weather can be claimed. Miss C. O. Stevens, who describes a long-sustained solar halo in our correspondence columns, made observations of the coloured skies on the nights of June 30, and July 1 and 2, until daybreak obliterated them. She says :—"The naked-eye evidence favours the view that the phenomenon was due, in part at least, to auroral display, both in the brilliant white and delicate green patches of light that were of rather inconstant brilliance, and in the spreading of the rosy light into the far south and south-west at 1.45 a.m. on July 1." We are informed, however, that spectroscopic observations failed to give any evidence that the phenomenon was auroral in character.

THE death is announced, at the age of eighty-four, of Prof. J. V. Barbosa du Bocage, director of the Zoological Institute at Lisbon.

THE death is announced, in his seventy-third year, of Prof. C. Schrader, the leading authority in Germany on the Assyrian language and Assyrian civilisation.

THE prize of 10,000 francs (400*l.*) offered by M. Armand Gautier to the first aeroplane to remain in the air for a quarter of an hour was won by Mr. Farman on Monday, at a competition held at Issy-les-Moulineaux, under the auspices of the Aéro Club. Mr. Farman made a flight with his apparatus which lasted 20m. 20s. according to the official timing. He covered a distance of about eleven miles.

COUNT ZEPPELIN last week made a remarkably successful flight in his new airship. The airship started on its voyage from Friedrichshafen at 8.30 a.m. on July 1, and headed for Switzerland. After executing evolutions over Lake Constance, the airship proceeded in the direction of Lucerne, where it was seen at 12.30 p.m. The return northwards was over lakes Zug and Zürich, and the airship was observed over the town of Zürich at 2.20 p.m. The airship's floating shed on Lake Constance was reached at 8.30 p.m. The distance covered is estimated at 250 miles, and the journey lasted twelve hours. The greatest height reached by the airship's own engine-power is stated to be some 750 metres, and the highest speed 15.3 metres per second. It will be remembered that the previous record

voyage of Count Zeppelin was in September last, when the airship was in the air for eight hours and a half. We notice that Count Zeppelin has received a telegram of congratulation from the German Emperor.

THE Institution of Electrical Engineers has bought the unexpired lease of seventy-six years of the Medical Examination Hall, on the Victoria Embankment, from the Royal College of Physicians and the Royal College of Surgeons. The purchase price agreed upon is 50,000*l.*, the annual ground rent being 220*l.* The Institution of Electrical Engineers will take possession of their new premises on June 1, 1909. It is expected that the building will provide adequately for the needs of the institution, and afford suitable accommodation for its library.

THE Antarctic Expedition, which is to leave shortly under the leadership of Dr. Jean Charcot, has, according to the *Globe*, been granted a subsidy of 24,000*l.* by the French Government. Dr. Charcot's vessel, the *Pourquoi Pas*, has been specially built for ice work. The party will include a biologist, a meteorologist, two astronomers, and several naval officers. Dr. Charcot expects to be away two years. Coal will be taken in at Punta Arenas, and the base of the operations in case of need will be the island of Port Charcot, where the leader spent a year in 1903. It is interesting to note that it is intended to take two motor sledges on the expedition.

A REUTER telegram states that Commander Peary left in the *Roosevelt* on his expedition to the North Pole on July 7. The *Roosevelt* has been provisioned for three years, although her commander hopes to accomplish the journey to the Pole and back in half that time. At Whale Sound Commander Peary will take on board twenty-five Eskimo hunters and dog drivers with their families, making between forty and fifty persons. The expedition will require from 200 to 250 dogs. Commander Peary hopes to accomplish the object of the expedition and return by October, 1909. For winter quarters he will endeavour, a *Times* correspondent states, to force the *Roosevelt* to the same point on the north shore of Grant Land that he occupied in the winter of 1905-6. Commander Peary only lacks 1000*l.* of the 10,000*l.* needed to equip the ship adequately for a two years' voyage.

THE first international congress concerned with questions of the production of low temperatures and their application to industrial and sanitary purposes is to be held in Paris from October 5-10 next. The congress is being assisted by the French Government, by several municipalities, by commercial companies, and other bodies. The programme which has reached us shows that the business of the meetings will be transacted in six sections, dealing respectively with the following subjects:—section i., low temperatures and their general effects, president, Prof. d'Arsonval; section ii., freezing mixtures and machines, president, Prof. H. Leauté; section iii., application of low temperatures to foods, president, M. A. Gautier; section iv., application of low temperatures to other industries, president, M. E. Tisserand; section v., applications of low temperatures to commerce and transport, president, M. Levasseur; and section vi., legislation, president, M. J. Cruppi. The sections are subdivided somewhat minutely, and the specialist will have every opportunity of acquainting himself with modern views of every aspect of the subject. The general president of the congress is M. André Lebon, and the general secretary M. J. de Loverdo, 10 rue Denis-Poisson, Paris (17^e).

IN the House of Commons on Monday, Sir E. Sassoon asked the President of the Board of Trade whether his attention had been directed to the issue of the report of the Select Committee on the Daylight Saving Bill, and, if so, whether the department had expressed any opinion relative thereto. In reply, Mr. Churchill said:—"I have read the report of this committee with much interest and with a lively recognition of the advantages which the Bill in question appears at first sight to offer to all classes, and especially to the working classes. I have arranged for the whole subject to be carefully examined by the Board of Trade in consultation with representatives of trade, labour, and transport interests. Pending the result of this examination it is not possible for me to express an opinion." We refer elsewhere in the present issue to some of the objections to this proposal to juggle with time-keepers. In rural industries the hours of work are adapted to hours of daylight at different seasons of the year, and this is also the case with workers in building and engineering trades. The proposal to legislate for national self-deception in time reckoning because of the late hours now kept in cities is as unscientific as it would be unworkable. It would be just as reasonable for Parliament to decide that a temperature of, say, 50° should be called 40° in summer and 60° in winter.

THE death is announced, from Berlin, of Prof. Oskar Liebreich, the pharmacologist, in his seventieth year. We learn from the *Times* that Prof. Liebreich early devoted himself to the study of technical chemistry under Fresenius at Wiesbaden. At the age of twenty-seven he was appointed to the department of the Pathological Institute by the late Prof. Virchow, who formed a high opinion of his abilities. In 1872 Dr. Liebreich became director of the Pharmacological Institute in Berlin. His name will always be associated with the introduction, in 1872, of hydrate of chloral as a therapeutic agent, which has since been used widely as an anodyne and narcotic. He was an authority on the treatment of lupus, and published a number of works and special articles on this and other questions of therapeutics.

THE seventh International Congress of Applied Chemistry is to be held in London from May 27 to June 2, 1909, under the hon. presidency of Sir Henry Roscoe, F.R.S., he himself being the acting president. It is hoped that the Prince of Wales will open the congress. The meetings will be held in the University Buildings, in the Imperial College of Science, and in the Central Technical College. The special sections and their presidents will be as follows:—analytical chemistry, Dr. T. E. Thorpe, C.B., F.R.S.; inorganic chemistry and allied industries, Dr. Ludwig Mond, F.R.S.; (a) metallurgy and mining, Sir Hugh Bell, Bart., (b) explosives, Sir Andrew Noble, Bart., K.C.B., F.R.S.; organic chemistry and allied industries: (a) organic products, Prof. W. H. Perkin, F.R.S., (b) colouring substances and their uses, Prof. Meldola, F.R.S.; industry and chemistry of sugar, Mr. Richard Garton; starch industry: (a) starch industry, Dr. Horace T. Brown, F.R.S., (b) fermentation, Mr. John Gretton, M.P.; agricultural chemistry, Lord Blyth; hygiene, medical and pharmaceutical chemistry—bromatology, respectively, Sir J. Crichton Brown, F.R.S., Mr. N. H. Martin, and Mr. R. R. Tatlock; photographic chemistry, Sir W. de W. Abney, K.C.B., F.R.S.; electrical and physical chemistry, Sir John Brunner, M.P.; and law, political economics, and legislation with reference to chemical industries, Lord Alverstone. The provisional programme has been drawn

up; it comprises the opening meeting in the Albert Hall, a conversazione at the Natural History Museum, a banquet at the Crystal Palace, and lectures by Profs. Haller, Otto Witt, and Nasini, and by Sir Boverton Redwood. Committees have been formed in foreign countries to organise the work of the sections, and an executive committee has charge of the arrangements at home. It is anticipated that the congress will be largely attended; meetings in Paris, Berlin, and Rome were attended by about 3000 chemists. The honorary secretary is Mr. William Macnab, of 10 Cromwell Crescent, S.W.

DR. LUIZ CRULS, whose death we recorded in our issue of July 2, was born at Diest, in Belgium, in the year 1848. The early years of his manhood were devoted to the military service of his country as an officer in the Engineers. In 1881 he accepted the post of director of the observatory at Rio de Janeiro, and from that date he took a prominent part in scientific work in Brazil. In addition to the directorship of the observatory, he held the post of professor of geodesy and practical astronomy in the military academy. He was also the head of many scientific commissions appointed by the Brazilian Government, among others of that for the exploration of the central plateau of Brazil, and the report of this commission forms an important part of his scientific work. His remaining contributions to scientific literature were of an astronomical or meteorological nature. One of the most important was a report on the observations of the transit of Venus, made at Punta Arenas in 1882. Numerous other astronomical papers appeared in the *Comptes rendus* of the Academy of Sciences of Paris. A detailed discussion of the climate of Rio de Janeiro calls for special mention among his meteorological works.

AMONG the list of new fungi determined by Mr. G. Massee, and recorded in the current number of the *Kew Bulletin*, there is a notable species from Grenada, *Nectria theobromae*, a parasitic fungus that forms "bleeding" wounds on the bark of cacao trees. From Old Calabar was received an edible agaric, *Volvaria esculenta*, that grows on coffee pulp. *Boletus curtipes* furnishes the first record for the genus from South Africa.

WHEN visiting the German colonies in tropical Africa, Dr. W. Busse paid special attention to the effects of the grass fires periodically kindled by the natives, and has summarised his observations in the *Mittheilungen aus den deutschen Schutzgebieten* (vol. xxi., part ii.). The original motive would be to clear the land for cultivation, or by burning the old stems to induce a fresh growth of young shoots, and occasionally to drive the wild game for a battue. The general result has been to produce, as in Togoland, the "steppe" vegetation where originally forests existed. Although directly and indirectly the consequences are in the main disastrous, it is noted that by the destruction of dangerous insects fires may serve to check such evils as the "surrah" disease.

A SUBSTANTIAL account of the Fucaceae, prepared by Mr. K. Yendo and published in the *Journal of the Royal College of Science, Tokio* (vol. xxi., article 12), forms a welcome addition to algal literature. With regard to distribution, it is noted that species of *Fucus* and *Pelvetia* are confined to the north, *Cystoseira* to the Loochoo Islands, and a boundary between cold and warm sea forms can be set at Kinkwasan Island on the east and Ojika peninsula on the west. *Sargassum* is the largest genus, with forty-one out of fifty-nine recorded species, and six species are assigned to *Cystophyllum*. *Coccophora Langsdorfi* is an

interesting species with a perennial knotty stump, from which arise two distinct kinds of branches; similar differentiation is noted for an alga that is made the type of a new genus, *Ishige*. A series of fine illustrations adds to the value of the critical notes on the various species.

AN interesting contribution to the cytological structure of coelenterates is made by Mr. H. B. Bigelow, who has studied the cell divisions in *Gonionemus murbachii*, and has published his results in the *Bull. Mus. Comp. Zool.* at Harvard College (vol. xlvii.). The nuclei possess in somatic cells about twenty-four chromosomes, and the nucleolus is regarded as consisting of a peripheral shell of chromatin enclosing a non-chromatic substance. During the reductions, suggestive stages were made out recalling the observations made by Korschelt on *Ophryotrocha*. The chromosomes arise by stages closely resembling those seen in a somatic mitosis. There is, however, an early synapsis-like ("pseudosynapsis") appearance which Bigelow interprets as an artefact. The modified spireme forms a reticulum, which then breaks up into about twenty-four spherical chromatin masses. This fact is remarkable, inasmuch as there are twenty-four somatic chromosomes, but in the preceding spermatogonial mitoses each of these arises by the coalescence of two "chromomeres." The author regards, on grounds which do not seem to us to be conclusive, the twenty-four chromatin spheres, not as the equivalents of somatic chromosomes, but as chromomeres, and hence concludes that a reduction has already occurred. But it seems at least as probable that we are really dealing with a belated pairing, to form the pseudochromosomes, and this would bring the process into line with some cases of the sort already known elsewhere. The details given of the maturation of the egg seem not to be opposed to such a view. The author is excessively cautious in drawing conclusions, and whilst this is a wise position to adopt for the present, it is to be hoped he will continue his observations so as to enable him to put forward his interpretation with more confidence.

IN 1811 the Spanish Viceroy of Mexico addressed to the authorities in California a series of questions designed to procure information regarding the Indian population attached to the Missions, their manners and customs, religious beliefs, and social condition, and the results produced on them by missionary teaching. The original replies to this series of interrogatories, prepared by the authorities of the leading missions, now form part of the Bancroft Library at the University of California, and have been translated and published as the first *Bulletin* of the eighth volume of their *Transactions*, with excellent annotations by Mr. A. L. Kroeber. The replies are naturally of varying degrees of value. Some exhibit a good knowledge of the people among whom the authors worked; and they generally display a spirit of tolerance towards non-Christian beliefs, thus forming an interesting picture of native society before it had been much influenced by Europeans, and long before the period of scientific ethnology. In particular, the accounts of the vulture sacrifice as a mode of commemorating the dead, the feathers of the bird being used as a dress of a boy who danced before the community; and the use of jimson-weed (*Datura meteloides*) as a means of producing the ecstatic condition in youths at the initiation ceremony, when they saw visions, and were instructed in the religious beliefs and practices of the tribe, deserve special notice.

IN an address delivered before the National Geographic Society of America, published in the May number of the

National Geographic Magazine under the title of "An American Fable," Mr. Gifford Pinchot, chief of the United States Forest Service, raises the question of the exhaustion of the national resources, a subject which has recently been discussed by President Roosevelt. The growth of the forests at present is, he states, but one-third of the annual consumption, and the timber will last only twenty years at the existing rate of expenditure. For a country so largely dependent on wood for building and fuel, the result of the wasteful policy of the last half-century will be disastrous, and Canada, the only available source of supply, will soon need all her timber for her own use. The anthracite coalfields, again, are said to be in danger of exhaustion in fifty years, and the bituminous coal will fail early in next century. Some of the older oilfields are already worked out; the natural gas has been wasted, burning night and day in many townships. Iron deposits grow less every year. The ranches in the west feed only half the cattle which they would produce under intelligent management, and the prices of meat are rapidly rising. The present, he observes, is one of the most critical epochs in the national history, and disaster is sure to occur unless a policy of conserving these resources is enforced. The only practical remedy, he suggests, for this dangerous state of things is the appropriation of the vast supplies of water power for the production of electrical energy to take the place of coal for machinery, heating, and illumination. If these fall into the hands of trusts the prospect is gloomy in the extreme. "We are no more exempt from the operation of natural laws than are the people of any other part of the world."

THE new Bernese Alpine Tunnel and the Lötschberg Railway are discussed in an article by Dr. C. Koppe in *Himmel und Erde* for April. In pointing out the hindrance caused by the Bernese Alps to the utilisation of the Simplon Tunnel route, Dr. Koppe emphasises the great commercial advantages, not only to Bern and north-west Switzerland, but also to the western Rhine district, which would follow the construction of a railway connecting Brieg, at the northern end of the Simplon Tunnel, with Bern. The first part of the line, from Spiez to Frutigen, has been constructed for several years, and it has been decided to continue this line to Brieg, a tunnel being pierced through the Bernese Alps at Lötschberg. The building of the lines from Brieg and Frutigen to the south and north of the tunnel entrance will be commenced in the summer of 1908, and the whole international railway, Bern, Lötschberg, Simplon, should be completed in five years. The Bernese Alpine Railway Company was formed in July, 1906, and the work of triangulation carried out in the autumn of the same year, accurate data being obtained for fixing the length and direction of the tunnel. The three mountains situated on the line of the tunnel, First, Immenengrat, and Wildelsiggrat, were used as bases for the survey. Boring was commenced in the spring of 1907, electric power being derived from works at Spiez and Gampel. Dr. Koppe gives a detailed description of the proposed line from Frutigen, through Mitholz and Kandersteg, to the tunnel entrance, and also of the line from Goppenstein to Brieg, noticing the numerous small tunnels and viaducts which will be required.

WE learn from the *Bulawayo Chronicle* that at a meeting of the Rhodesian Scientific Association on May 19, the Rev. Father E. Goetz, S.J., read a useful paper on the rainfall of Southern Rhodesia, based on observations at about fifty stations, reduced to the period 1888-1907. Among the principal results we note that Mashonaland, as

a whole, has an annual average of more than 30 inches; the eastern range of high altitudes has 40 inches and upwards, while on the slopes towards the Zambesi and Limpopo the average is between 25 and 30 inches. Matabeleland is much less favoured; along the watershed the average is 25 east of Bulawayo and 20-25 west of that place. Between April and October not more than an inch of rain falls on an average in Rhodesia, west of the eastern range of high altitudes; from October to March 90 to 98 per cent. of the year's rainfall takes place. Reference must be made to the original paper for many very interesting details in connection with the *régime* of the rainfall and the influence of wind direction. With regard to the question of cycles the author states that, although there are only ten years' barometer observations available, his inquiries show that investigation on the line of a 19-year variation in the barometer and of a corresponding variation in the rainfall might perhaps be continued with profit.

PROF. SILVANUS P. THOMPSON'S "Kelvin Lecture," delivered to the Institution of Electrical Engineers on April 30, has been issued as a separate pamphlet by Messrs. Spon. It consists of a sketch of the life and work of Lord Kelvin, and gives within its short compass a more vivid picture of the great master than have several more lengthy accounts.

THE Sanitas Electrical Co., Ltd., of New Cavendish Street, London, W., has sent us a profusely illustrated and conveniently arranged catalogue, running to 338 pages, dealing with electromedical apparatus which the company is prepared to supply. The catalogue provides remarkable evidence of the numerous applications in medical and surgical science of the Röntgen and other rays. Incidentally, the appliances described in the catalogue serve to illustrate the debt of gratitude which mankind owes to the men of science upon whose work, often little recognised, these remedial measures are based.

M. P. VILLARD exhibited before the Société Française de Physique on May 4 an experiment in which the Aurora Borealis was produced artificially (see *NATURE*, September 5 1907, vol. lxxvi., p. 481), and a complete description of the method used is given by M. Villard in the June number of the *Journal de Physique*. A large exhausted flask is placed between the poles of an electromagnet, and a stream of kathode rays is shot into the flask in a direction oblique to the magnetic field. In these circumstances the rays become a luminous spiral with its axis directed towards one of the poles of the magnet. At a point near this pole the path of the ray is nearly reversed, and the spiral proceeds towards the other pole, at which the reversal is repeated. Owing to the axes of the spirals being slightly inclined to the lines of the field, they generate a spheroidal surface coaxial with the field with a circular piece cut out at each pole. According to the theory which this experiment at once suggests, in our observation of the aurora we are looking at the edge of one of these openings from underneath, the spirals coming nearest to the earth's surface at these points and being most luminous.

MESSRS. LEITZ, of Wetzlar and London, have submitted for our inspection one of their prism binoculars of improved design. Like the majority of modern instruments of this type, these are constructed on the principle of Porro's erecting prisms, but several additional patents on details enable special points of excellence to be claimed. The tubes are provided with focussing arrangements and inter-

pupillary adjustment. For the former, the focussing is done separately for each eye by rotation of the eye-pieces, controlled by a scale for future setting. Although at first this may appear more inconvenient than the usual double screw motion of both tubes, this is not found to be the case during continued usage, and the makers are enabled to introduce the very desirable feature of making the prism cases quite dust and moisture proof, which is almost impossible when sliding tubes are employed. As issued, the magnifying power is 6, and the field of view about 7°. With respect to the varying opinions as to the best arrangement of the object-glasses for stereoscopic effect, Messrs. Leitz have decided that the advantages of placing them further apart than the pupillary distance are questionable, and so the object-glasses are fitted at the same interval as the eye-pieces. The binocular is made of a specially strong light metal, the weight being only 12 oz. without case. We can without hesitation speak very highly of the optical performance of this instrument. The definition is remarkably crisp, and the image very achromatic and quite sharp up to the edge of the field of view.

A GENERAL index to the annual volumes, sixteen in number, published by the Geological Survey of Canada since 1884, has been compiled by Mr. Frank Nicolas and issued at Ottawa by the Geological Survey. The index runs to 1014 pages, and contains about 180,000 references. It should prove of great service to investigators anxious to refer expeditiously to the annual volumes of the Canadian Survey. The present catalogue, combined with the index previously published, and dealing with the publications from 1863 to 1884, forms a complete means of reference to the English edition of the volumes issued by the Geological Survey of Canada.

OUR ASTRONOMICAL COLUMN.

RADIAL VELOCITIES OF NINETY-NINE STARS.—The largest single contribution to line-of-sight work yet made appears in No. 5, vol. xxvii., of the *Astrophysical Journal* (pp. 301-24, June). The results were obtained by Prof. Küstner and Dr. Zurhellen, at the Bonn Observatory, during the years 1903-7, and include the provisionally determined velocities of ninety-nine stars of the second and third spectral types down to the fourth visual, or fifth photographic, magnitude.

A three-60°-prism spectrograph by Töpfer, giving a well-defined spectrum between $\lambda\lambda$ 4150 and 4500, was employed, the temperature being automatically controlled by electric means; at H γ the linear dispersion is such as to give 15.2 tenth-metres per millimetre.

Although the present values for the radial velocities are only provisional, it is expected that they will not be greatly modified in the final definitive results. In addition to fifteen previously known variable velocities, the ninety-nine sets of results include those for three other stars, δ Tauri, ϵ Böötis, and μ Pegasi, the radial velocities of which are suspected to be variable. The comparison spectrum employed in each case was that of the iron arc, Kayser's values of the wave-lengths being taken; Rowland's values were taken for the stellar lines. As the observations included some 7500 complete measures of about forty-four different stellar lines, Prof. Küstner expects that their discussion will provide good exact values for the relative wave-lengths of the latter, and also indicate their dependence on the type. In discussing the determination of the constant correction, due, first to the absolute errors of the wave-lengths adopted, and, secondly, to the personal and instrumental errors, Prof. Küstner considers as invalid the control usually obtained from plates exposed on the sun, moon, or larger planets. He believes that a source of light, of precisely known radial velocity

and as similar as possible to the star, should be observed, and suggests the employment of the brightest minor planets or of Jupiter's satellites for this purpose. After many experiments, and at Dr. Zurhellen's suggestion, he employed spectrograms of the bright isolated peaks seen at the moon's terminator, and found the results to be satisfactory. These indicate that a small negative correction of about -1.0 km. should be applied to the results now published. Of the constant radial velocities determined, that of η Cephei, -85.98 km., is the largest.

THE OBSERVATION OF COLOURED STARS.—In No. 4252 of the *Astronomische Nachrichten* (p. 57), Herr Osthoff discusses at some length the changes of the colour perception of the eye, and shows that these changes depend upon the physiological condition of the observer as well as upon the intensity of the colour of the observed object and upon the instrument used. A table containing the results of his own observations between January, 1894, and November, 1898, shows the variation of the difference between his estimates of colour and the catalogue colour of the stars observed; other tables show the variation of the eye's colour-perception for red and yellow stars respectively, and it appears that the eye is more uncertain in estimating the red than the yellow. The importance of this fact in observing the magnitudes of coloured variable stars is pointed out. There is some indication of a periodical change in the individual eye, but the observations are not sufficiently numerous to establish this.

PHOTOMETRIC OBSERVATIONS OF EROS.—During the period September, 1907, to January, 1908, Dr. Paul Guthnick made a number of photometric observations of Eros at the Berlin Observatory, and now publishes and discusses the results in No. 4249 of the *Astronomische Nachrichten* (p. 1, vol. clxxviii.). From his discussion he is unable to establish with certainty the existence of any short-period light-variation. On plotting the light-curve, taking into account the phase-variations, and trying periods of 5.24h., 5.28h., and 5.32h., he obtained a negative result. It appears certain that during the greater part of the opposition any short-period variation was imperceptible.

THE PHOTOGRAPHY OF VERY FAINT SPECTRA.—The expedient of slightly fogging plates on which it is proposed to photograph faint objects is generally known, but is apparently not so generally adopted. Having recently employed this procedure very successfully in the photography of faint spectra, Mr. R. W. Wood, of the Johns Hopkins University, describes his method and results in No. 5, vol. xxvii., of the *Astrophysical Journal* (p. 379, June). The curve representing the action of light on a sensitised plate is at its commencement flat, but after reaching a certain point it begins to rise much more rapidly; Mr. Wood's supplementary exposure carries the darkening of the plate to this point, so that the radiations he is wishing to photograph commence their action at that part of the curve where a given exposure is much more effective in producing density than if it were applied alone. By a judicious use of the method he has succeeded in reducing the exposure, necessary to produce a certain density, by one-half. The preliminary exposure needed is very small; with a gas flame turned down until the yellow tip was but 3 mm. or 4 mm. high, four seconds at a distance of about two metres was found to be sufficient.

JULY AND AUGUST METEORS.

THE meteoric season of July has again returned, bringing with it all the interesting associations attached to this period in previous years. Early Perseids will now be occasionally seen with their rapid flights, and leaving streaks upon their paths, but they will be directed from the southern region of Cassiopeia instead of from the place 45°+57°, as at the maximum epoch on August 11-12. Many long-pathed and slow-moving Aquarids will also be noticed from the point about 330°-10°, and this display generally develops its richest features near the end of July, on about the 28th to 30th.